

Interactive comment on “Response of the Black Sea methane budget to massive short-term submarine inputs of methane” by O. Schmale et al.

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The article of Kourtidis et al. (2006) studies the flux of methane from the Black Sea surface waters to the atmosphere using two different air/sea exchange models. The calculations are based on field studies carried out in the Western Black Sea. In addition, the article discusses the dispersion of atmospheric methane plumes caused by mud volcano eruptions in the Black Sea. The authors use an atmospheric 3-D Gaussian plume dispersion model to calculate the spatial methane concentration evolution.

It is obvious that our present manuscript is very different from the one published by Kourtidis et al. (2006). Based on a steady-state model described in the first part of our manuscript we establish a non-steady state model to study the response of the Black Sea methane cycle to massive methane inputs (e.g. caused by MV eruptions or sub-

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marine landslides), i.e. we analyze how this would affect the methane water concentrations and the fluxes across the air/sea interface. The box models include a bubble dissolution model similar to the one used by Kourtidis et al (2006), microbial methane oxidation rates within the water column, and water column transport processes like advection and diffusion. The present manuscript is clearly focused on water column studies; the flux of methane at the sea/air interface is just one part of our box model.

We, therefore, decided not to cite the article published by Kourtidis et al. (2006) because it is not the aim of the present manuscript (and completely out of scope) to review or compare the entire Black Sea literature addressing the subject of methane.

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